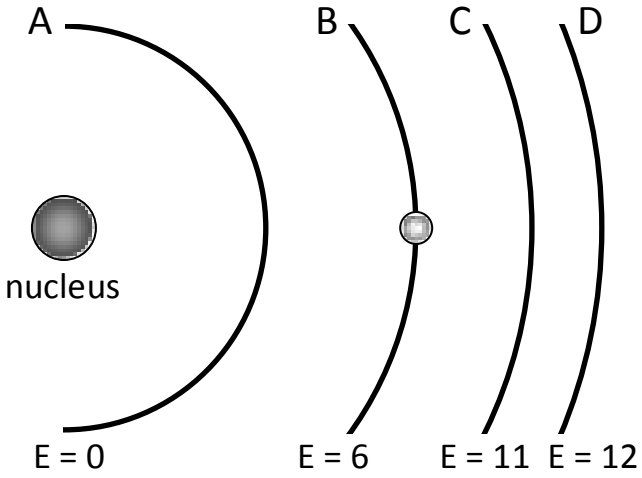
Astronomy Ranking Task:
Electron Transitions

Exercise #5

Description: The figure below shows the permitted electron orbits and their associated energies inside a fictitious atom. The electron orbits are labeled with the letters A through D. The electron is shown in the first excited state.



A. Ranking instructions: Rank the energies associated with the electron transitioning to each of the permitted orbits from the first excited state.

Ranking Order: Greatest 1 _____ 2 _____ 3 _____ 4 _____ Least

Or, the same amount of energy is associated with each transition. ____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

_____

_____

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_____

B. Ranking instructions: Rank the wavelengths of the photons associated with the electron transitioning to each of the permitted orbits from the first excited state.

Ranking Order: Shortest 1 _____ 2 _____ 3 _____ 4 _____ Longest
Or, the photons associated with the transitions all have the same wavelength. ____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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_____

C. Ranking instructions: Rank the frequencies of the photons associated with the electron transitioning to each of the permitted orbits from the first excited state.

Ranking Order: Lowest 1 _____ 2 _____ 3 _____ 4 _____ Highest

Or, the photons associated with the transitions all have the same frequency. ____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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